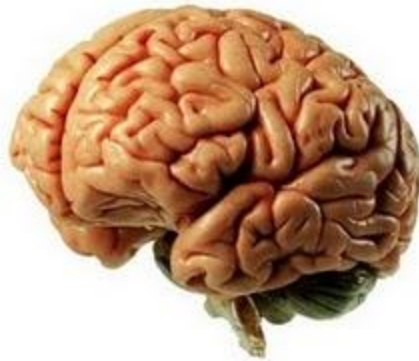




THE ZOMBIE AUTOPSIES

FOR EDUCATORS

The Brain of a Normal Human



Your Brain Evolved Over Time

Human Brain

- Logic and reasoning

Mammalian Brain

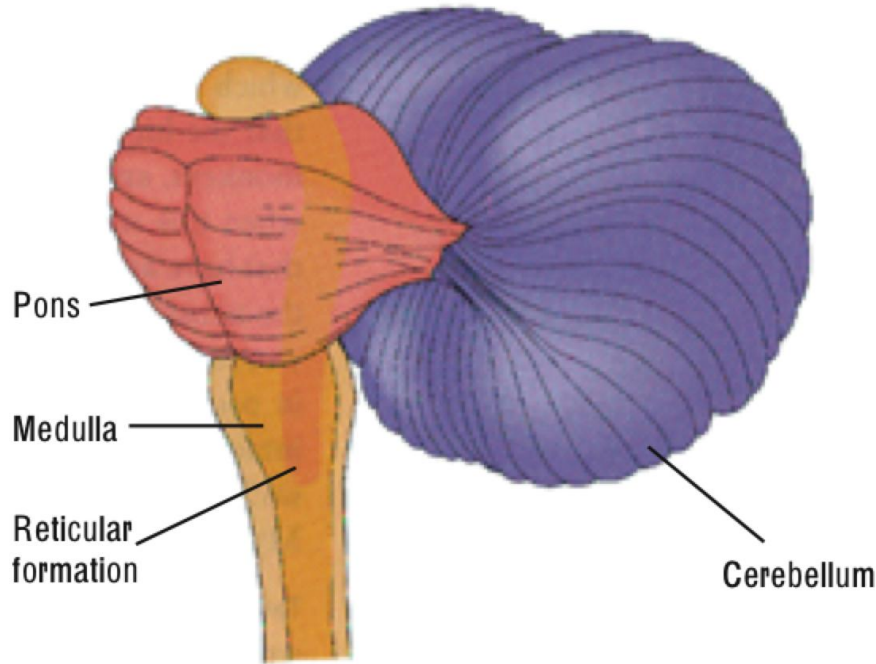
- More complex feelings and reactions

Lizard Brain

- Basic functions



The Brain Stem or Hindbrain (The Lizard Brain)



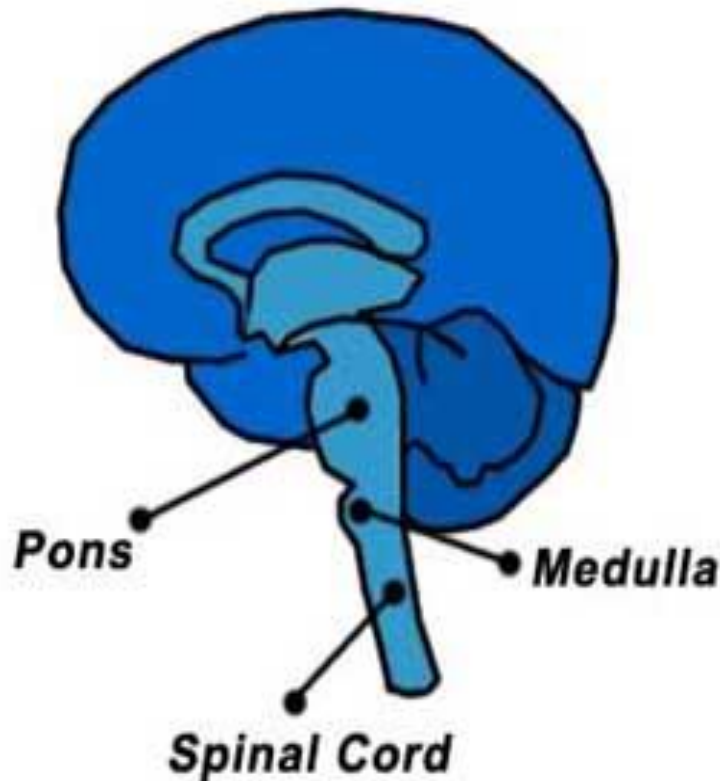
Location: the brain stem is an extension of the spinal cord

Activity in the brain stem is important for:

- *bodily activities essential to survival, such as changes in heartbeat and breathing
- *the focusing of attention
- *patterns of arousal (that is sleeping versus waking)

Ps. If the brain stem is damaged, a person may lapse into a coma or even die

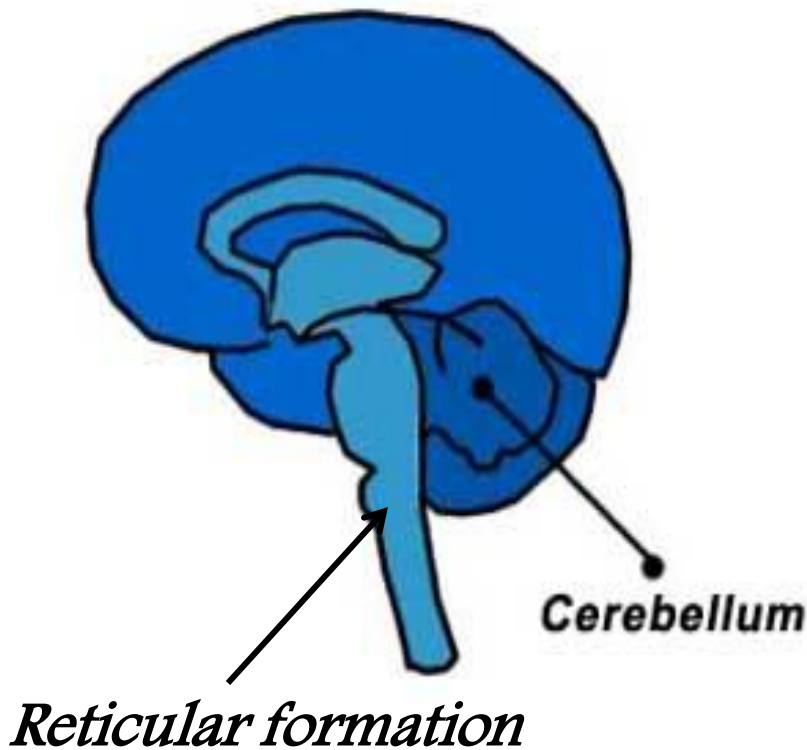
Important Parts of the Brain Stem



- **Medulla**—controls many vital autonomic functions such as heart rate, breathing and blood pressure.
- **Pons** —helps coordinate movement on each side of the body.

Important Parts of the Brain Stem

- The **cerebellum** is involved in the coordination of motor movements as well as basic facets of memory and learning.



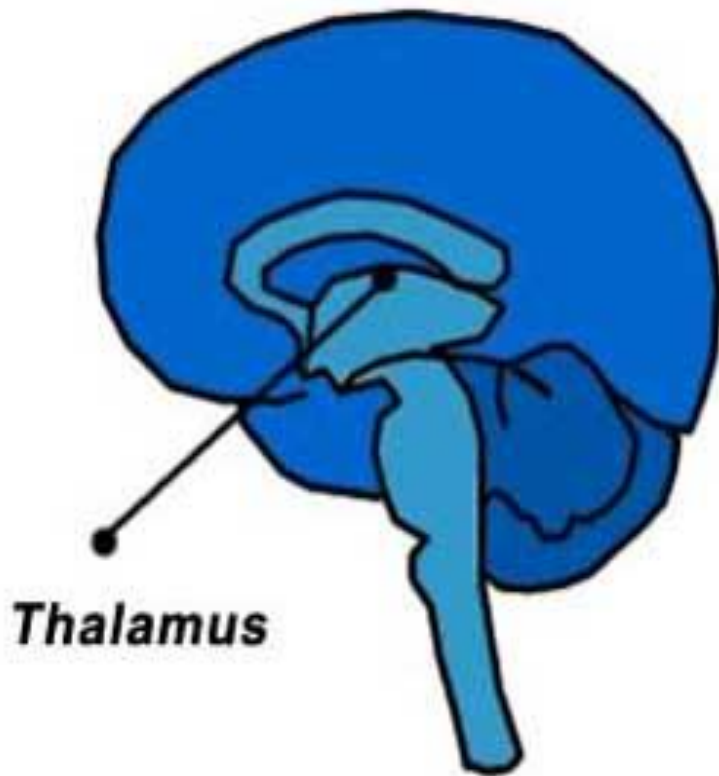
- * The **reticular formation** is a neural network located in the medulla that helps control functions such as sleep and attention

The Midbrain/ Limbic System (The Mammalian Brain)



- Located in the middle of the brain
- Associated with these behaviors
 1. Fighting
 2. Feeding
 3. Fleeing
 4. Reproductive behavior
- * The part of the brain that regulates emotion

Important Parts of the Midbrain



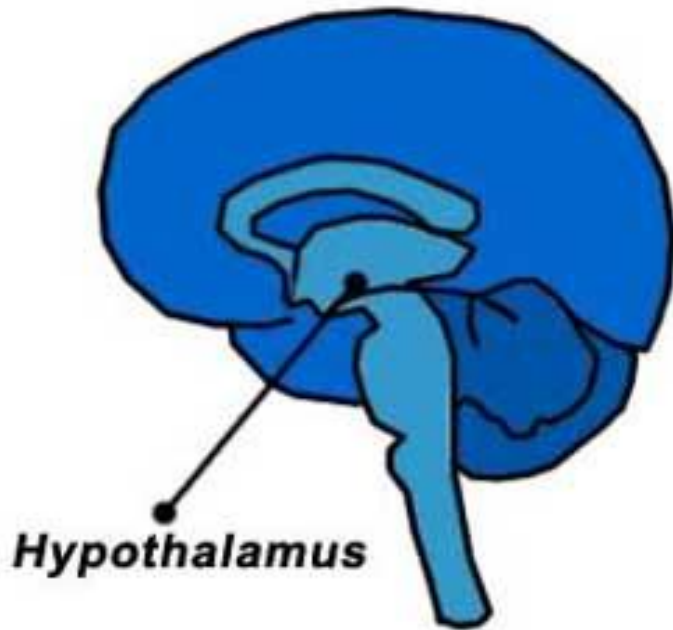
The **Thalamus** processes and relays **movement and sensory** information.

It is essentially a relay station, taking in sensory information and then passing it on to the cerebral cortex.

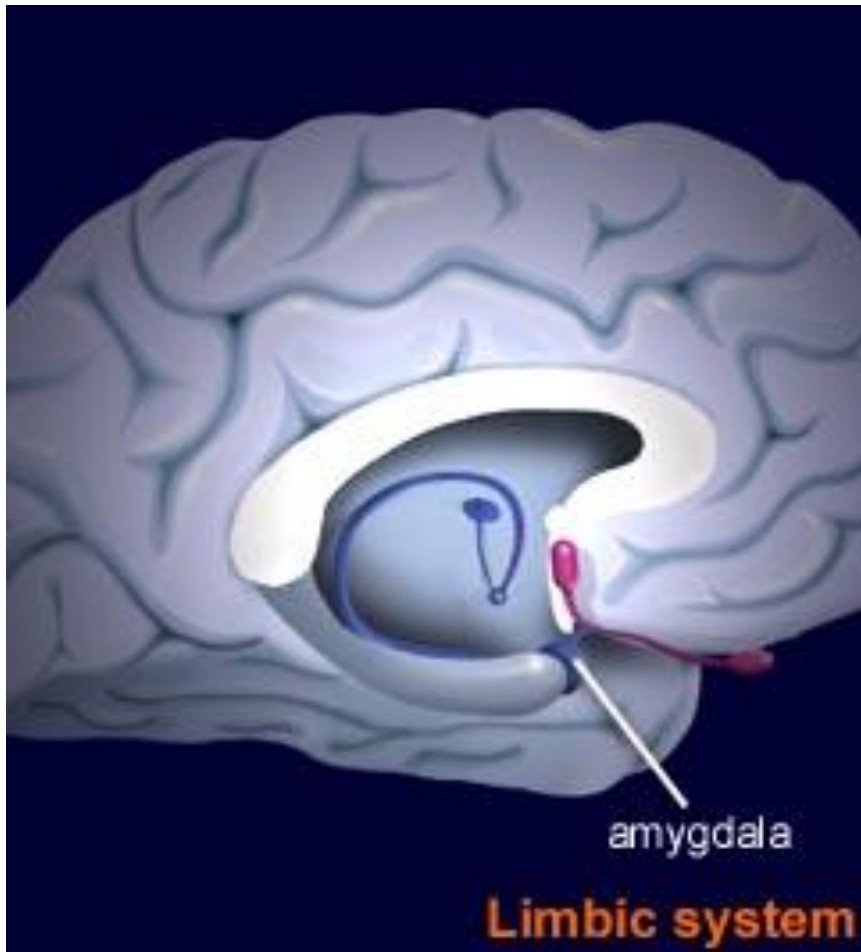
Important Parts of the Midbrain

The **hypothalamus**

connects with many other regions of the brain and is responsible for **controlling hunger, thirst, emotions, body temperature regulation, and circadian rhythms.**



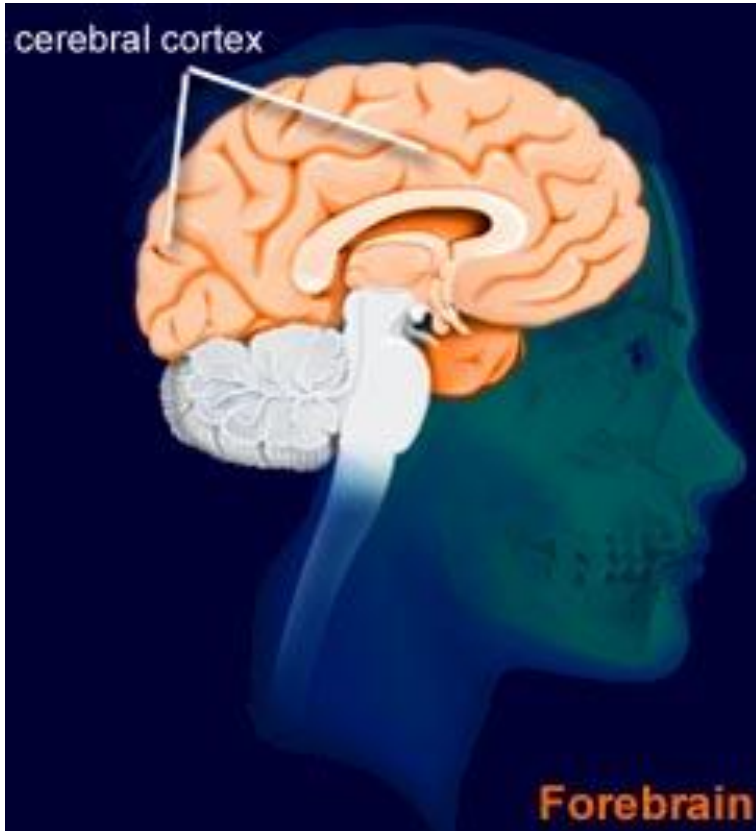
Important Parts of the Midbrain



Amygdala

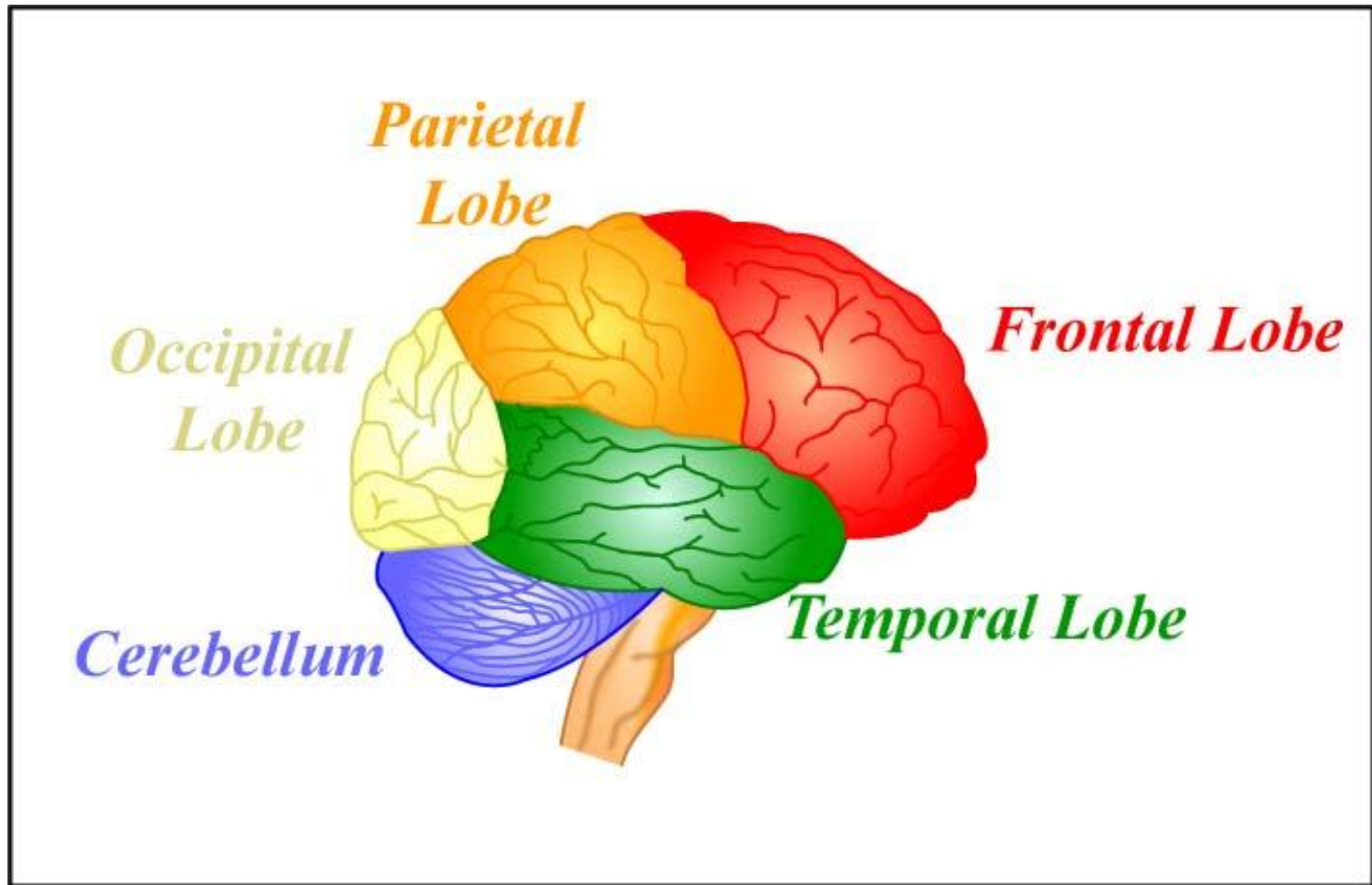
- An almond-shaped structure, implicated in the experience of **negative emotions** like fear.

The Cortex/Cerebrum (The Human Brain)

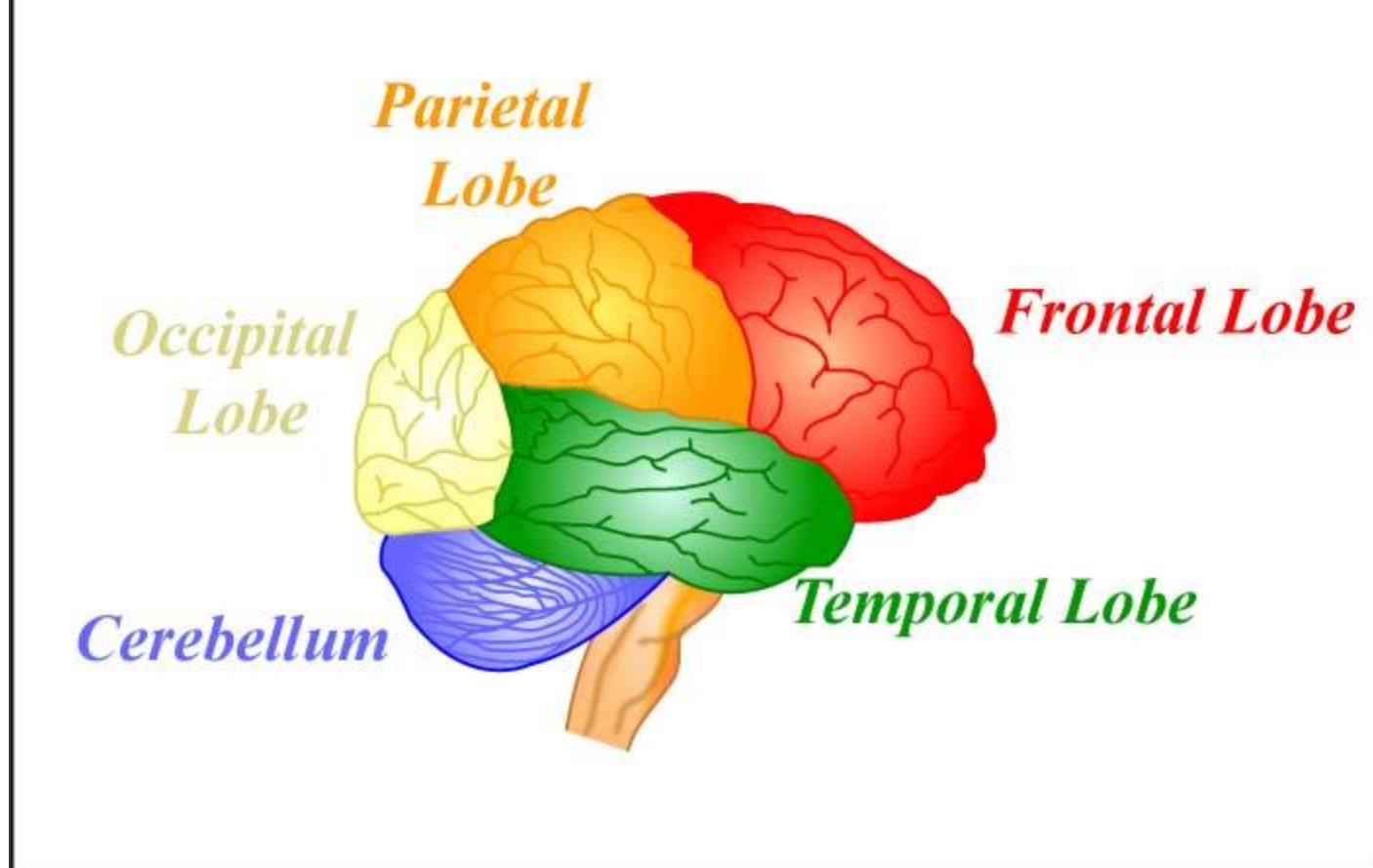


- The last part to evolve
- The outer layer of the brain
- Responsible for “executive functioning”
- What makes us human
- Thinking
- Divided up into specific parts (Lobes)

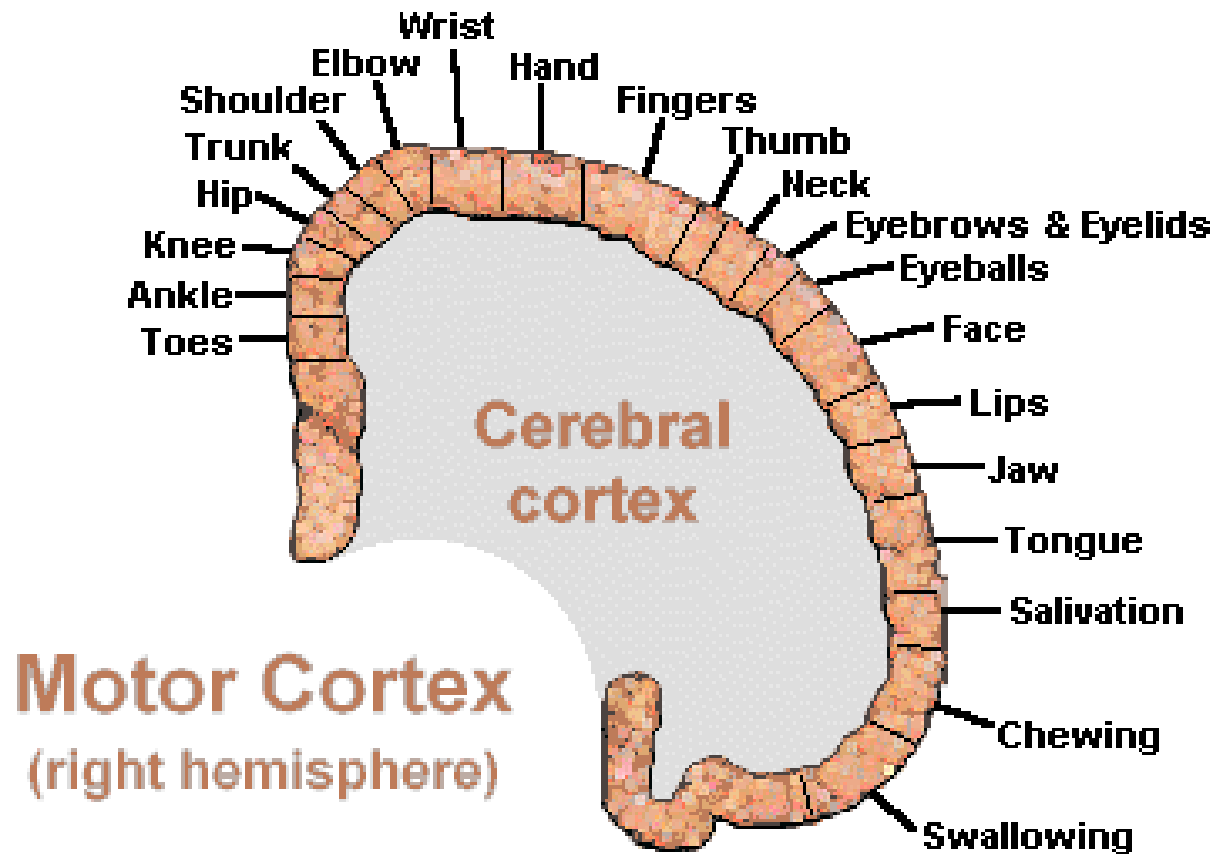
The Lobes of the Cortex



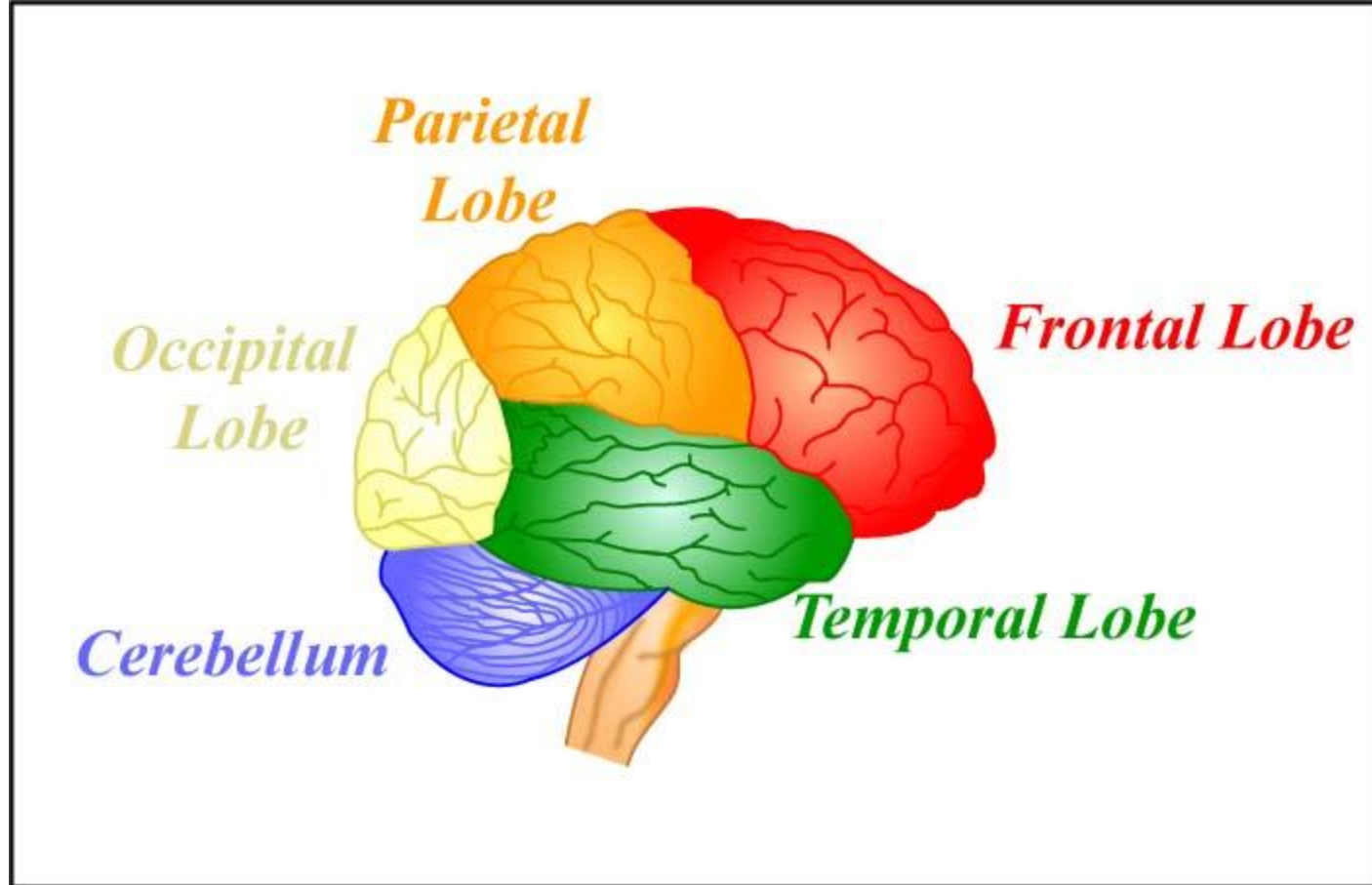




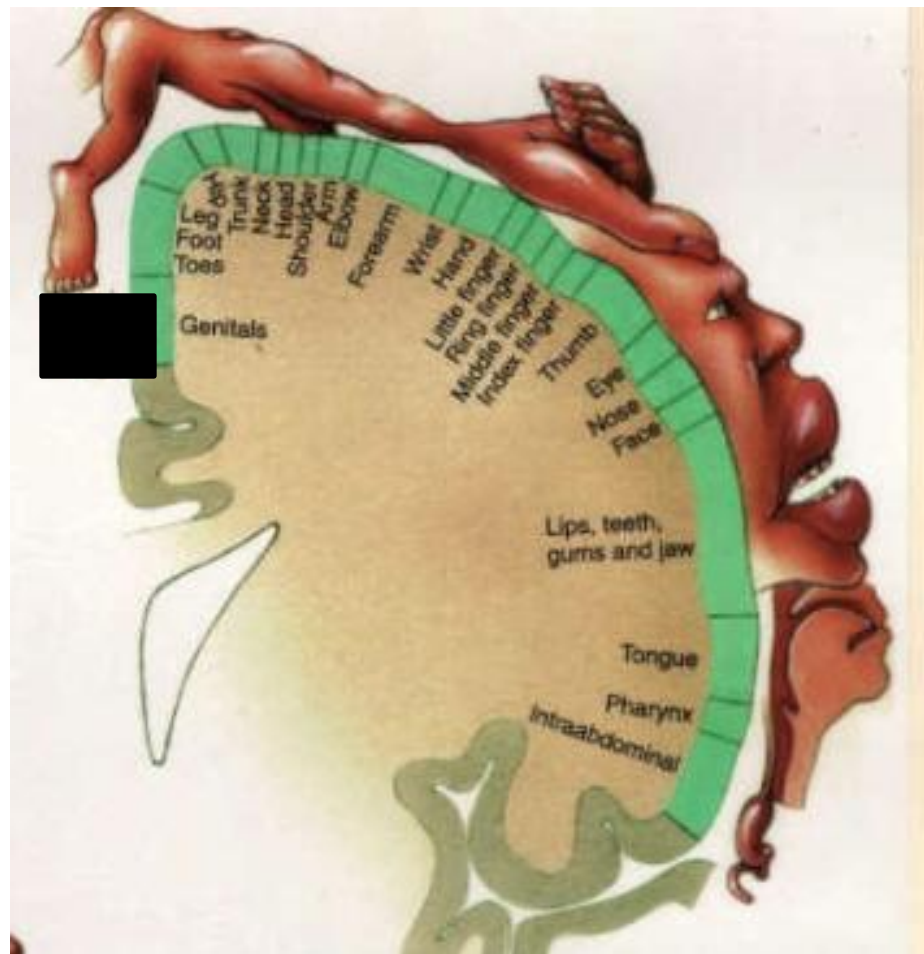
The frontal lobe is located at the front of the brain and is associated with reasoning, motor skills, higher level cognition, and expressive language.



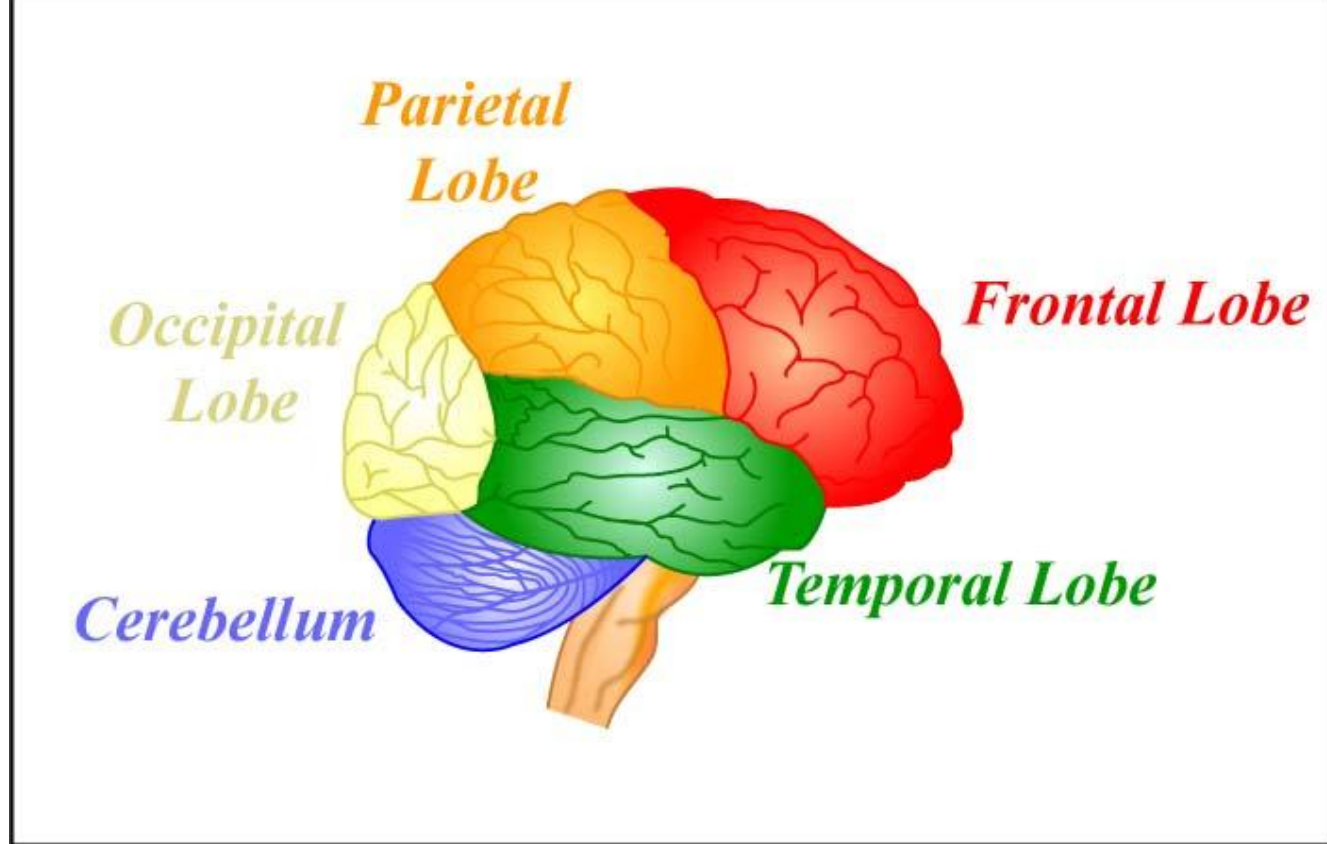
At the back of the frontal lobe lies the **motor cortex**. This area of the brain receives information to carry out body movements.



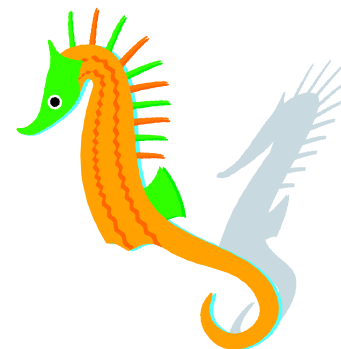
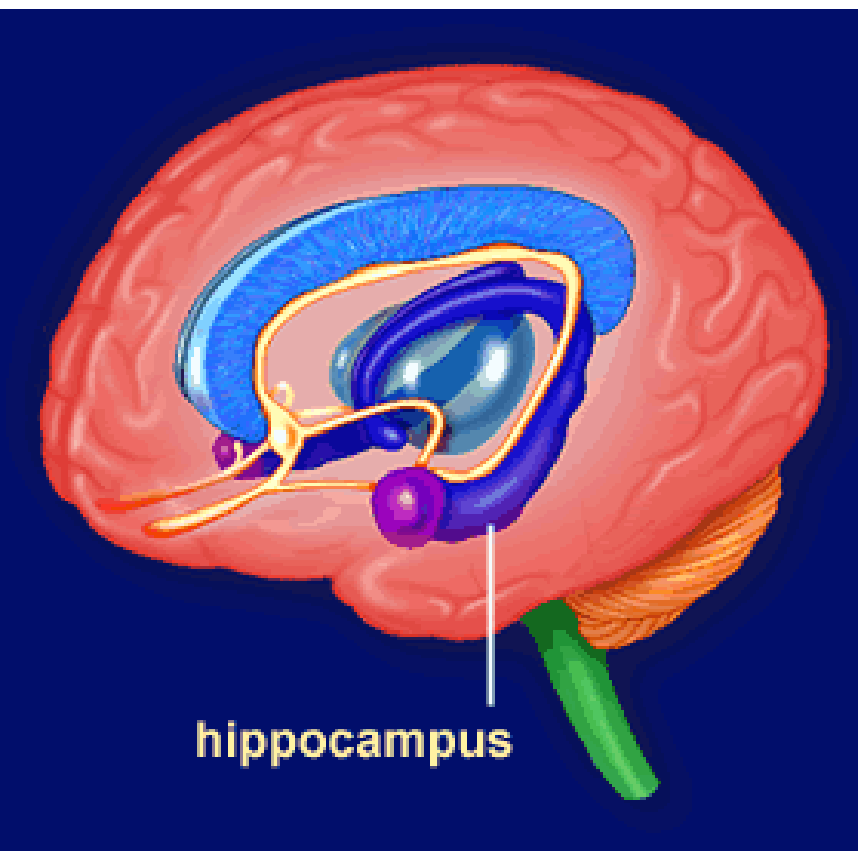
The **parietal lobe** is located in the middle section of the brain and is associated with processing tactile sensory information such as pressure, touch, and pain



- A portion of the brain known as the **somatosensory cortex** is located in this lobe and is essential to the processing of the body's senses.

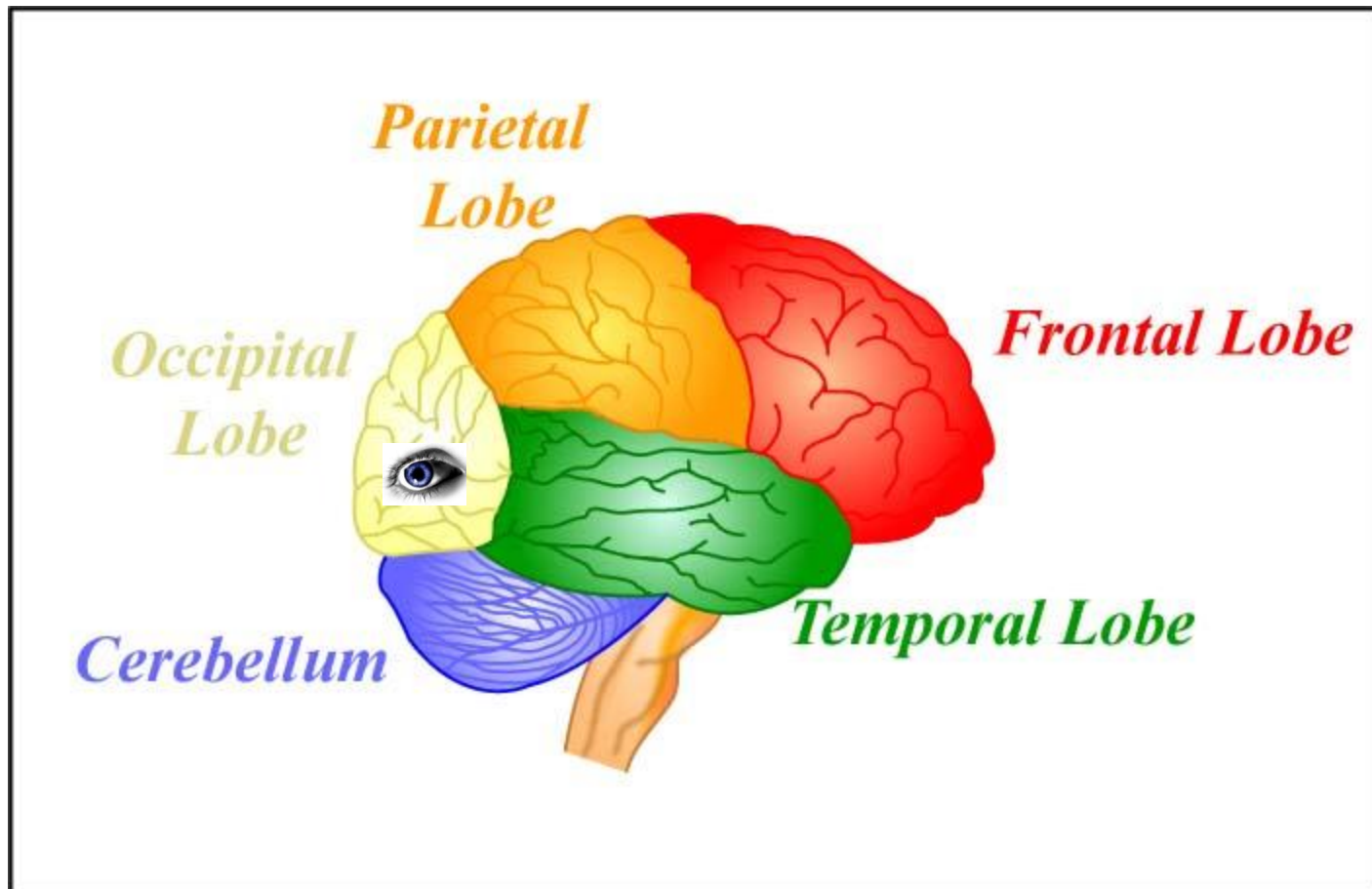


The **temporal lobe** is located on the bottom section of the brain. This lobe is also the location of the primary auditory cortex, which is important for interpreting sounds and the language we hear



Looks like a sea-horse

The **hippocampus** is also located in the temporal lobe, which is why this portion of the brain is also heavily associated with the formation of memories



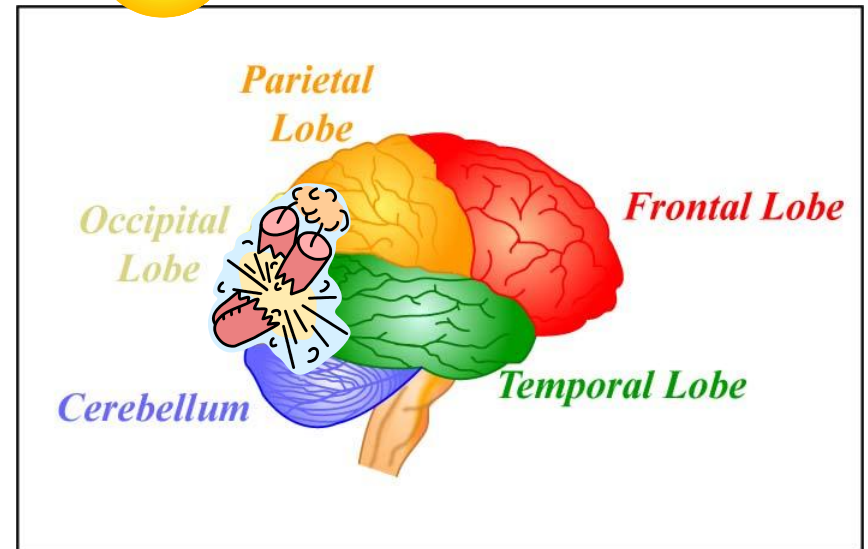
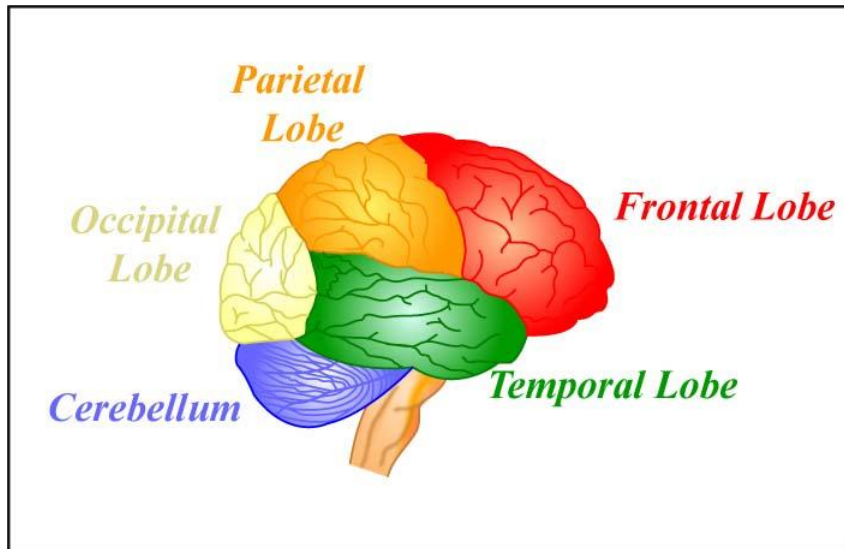
The occipital lobe is located at the back portion of the brain and is associated with vision.

We can learn a lot about the relationship between the brain and behavior when things go wrong...

A healthy **Occipital Lobe** means you can see.



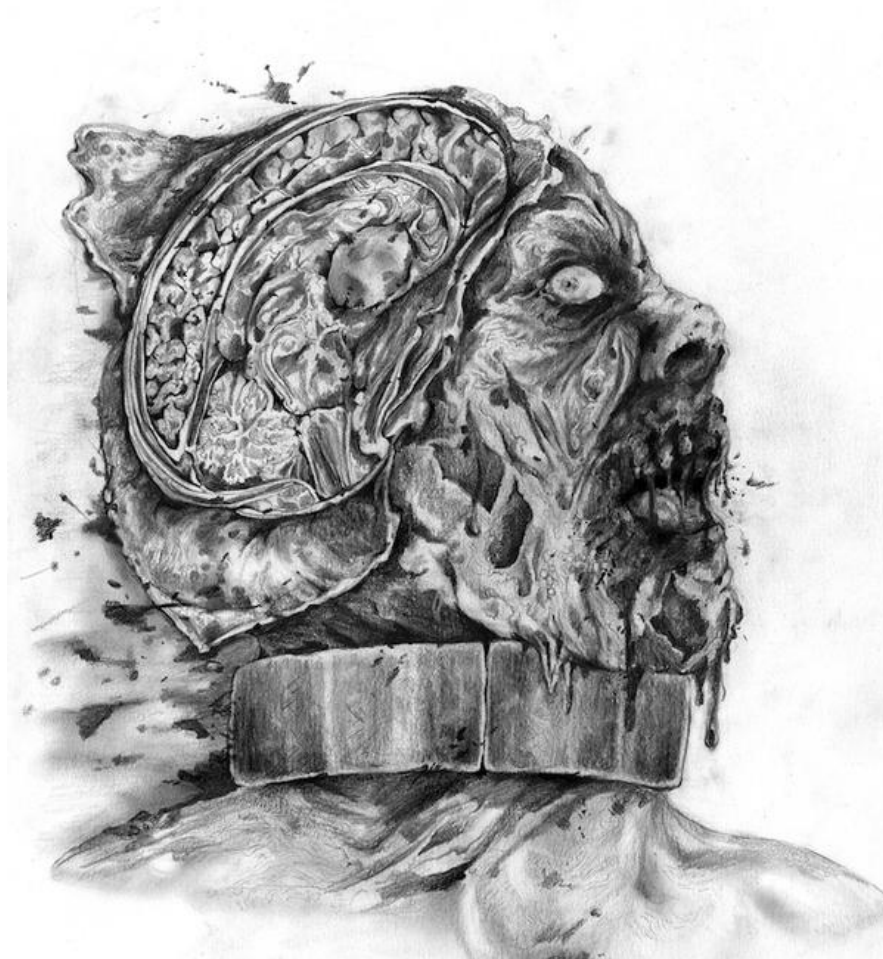
A damaged (blown up by dynamite here) **Occipital Lobe** means you cannot see.



In fact, the famous story of Phineas Gage taught us about the importance of the **frontal lobe**. It's the spot where a railroad spike went right through Gage's head. He survived, but began making poor decisions became impulsive– the opposite of his personality before the accident.



The Brain of a ZOMBIE



Let's start by identifying some behavioral characteristics of Zombies

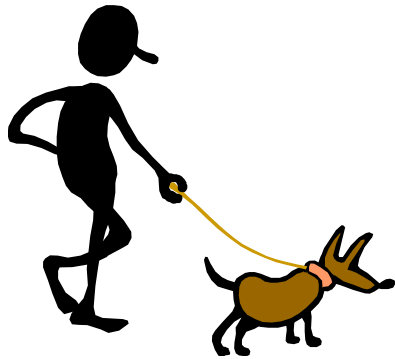


Click on the image to
watch zombies in action

Zombie Traits

1. Zombie Stagger
2. Zombie Appetite
3. Zombie Rage
4. Zombie Stupidity

The Zombie Stagger



Normal people can walk around with good coordination between their body and brain.



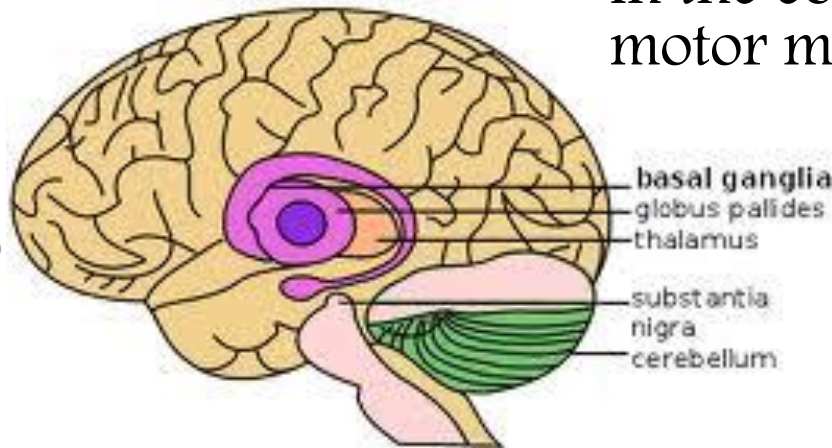
Zombies stagger around and seem clumsy.

They bump into things, and often hold their arms out for balance.

Coordinated Movement in the Brain

Man it sure is
hard to walk.
I have to put
my hands out
to balance!

Basal Ganglia and Related
Structures of the Brain



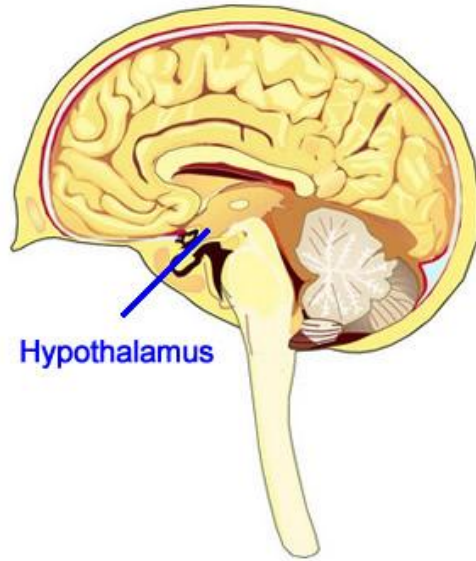
- The **cerebellum** is involved in the coordination of motor movements
- The **basal ganglia** works with the frontal lobe and brain stem to coordinate movement and behavior

The Zombie Appetite



- Typically after we eat we get full. We have a varied diet, but do not eat humans.
- Zombies are *always* hungry, even after a huge meal. And they like eating humans—which is problem.

Regulating Hunger in the Brain



The **hypothalamus** connects with many other regions of the brain and is responsible for *controlling hunger*, thirst, emotions, body temperature regulation, and circadian rhythms.



FEEED MEEEEE!!!!!!

The Zombie Rage

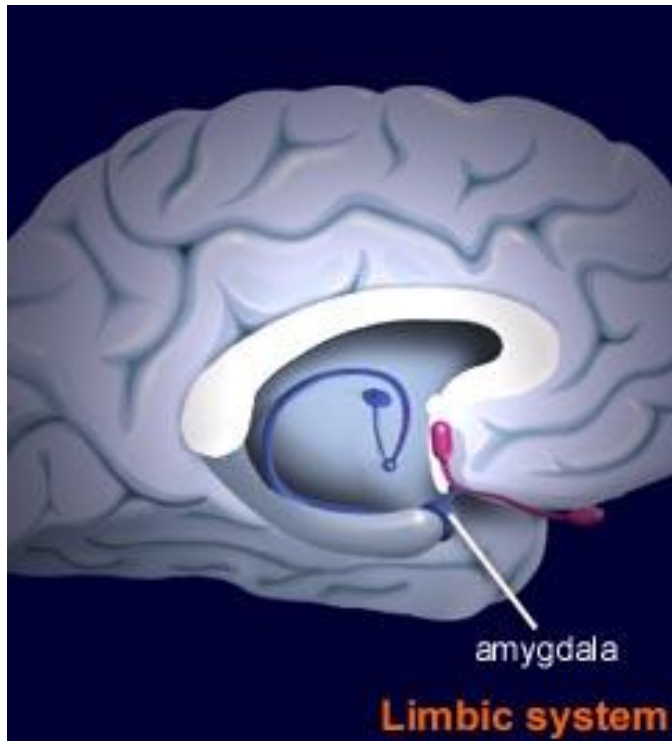


Regular people get angry, and there are some situations where they may even feel rage. However people typically feel anger and then return to their normal emotional state.



Zombies are aggressive at all times. They are extremely violent and tend to attack humans in an enraged state. They are dangerous and cannot be reasoned with.

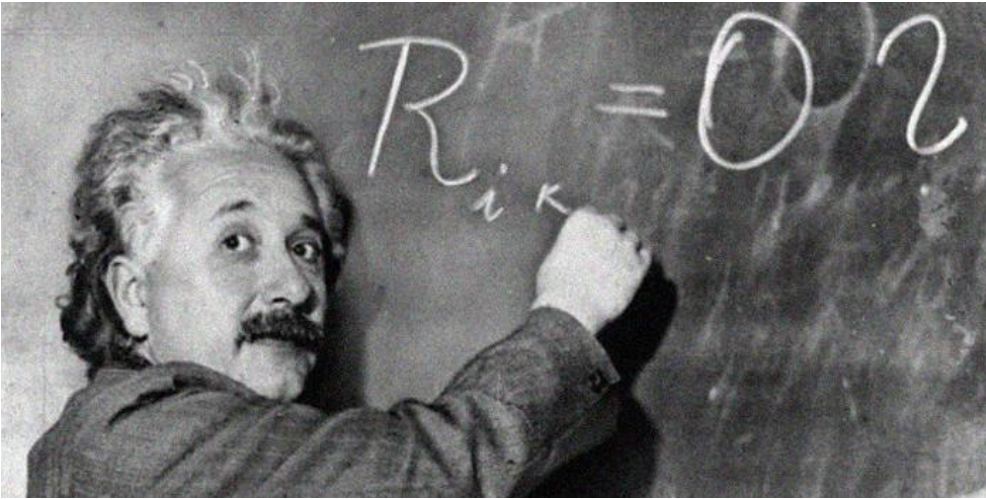
Aggression in the Brain



The **amygdala** is the brain's primal emotional center. It is implicated in the experience of negative emotions like fear and rage.



The Zombie Stupidity

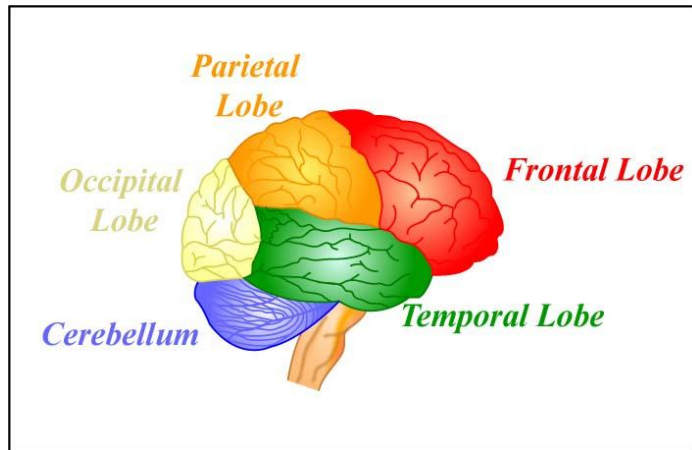


Humans are able to problem solve, communicate with each other through language, and can make complex decisions. This ability makes them unique and has contributed to their success as a species.



Zombies are known for their stupidity. They often can't figure out how to open doors and rarely, if ever, plan ahead. They are terrible problem solvers, and seem to lack any ability to communicate except through indistinguishable grunts.

Stupidity in the Brain



The frontal lobe is located at the front of the brain and is associated with reasoning, motor skills, higher level cognition, and expressive language.

